



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

JAN 21 1998

Ref: 8P2-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Kathy Turner
Petroleum Engineering Technician
Petroglyph Operating Company, Inc.
6209 North Highway 61
Hutchinson, Kansas 67502

RE: UIC MINOR PERMIT MODIFICATION
Conversion of Additional Well to
Antelope Creek Waterflood
EPA Area Permit UT2736-00000
Duchesne County, Utah

Dear Ms. Turner:

Your letter of December 15, 1997, requesting that the following production well be converted to a Class II enhanced oil recovery well and added to the Antelope Creek Waterflood, as authorized under EPA Area Permit #UT2736-00000, is hereby granted.

<u>NAME</u>	<u>LOCATION</u>	<u>EPA WELL PERMIT NO.</u>
Ute Tribal #07-09	NE/SE Section 7 T 5 S - R 3 W Duchesne County, UT	#UT2736-04415

This additional well is within the boundary of the existing area permit for the Antelope Creek Waterflood (UT2736-00000), and this addition is made by minor permit modification according to the terms and conditions of that permit. Unless specifically mentioned in this Minor Permit Modification, all terms and conditions of the original permit will apply to the construction, operation, monitoring, and plugging and abandonment of this additional injection well. The proposed well location, well schematic, conversion procedures, plugging and abandonment plan and schematic, submitted by your office, have been reviewed and approved as follows:

- (1) The conversion of this production well has been reviewed, and found satisfactory, therefore, no corrective action is required.



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RE: UIC MII
Conver
Antelo
EPA A
Duches

*Scan under
UT 20736-00000
Modification - minor
mod Approved
1/21/1998-2
Will need to link
with UT 20736-04415
in new database also
under 81 Add Well to Area
Permit.*

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- (1) The **conversion** of this production well has been reviewed, and found satisfactory, therefore, no corrective action is required.



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- (2) **Maximum injection pressure (Pmax)** - the permittee submitted a list of five (5) individual zones, within the Ute Tribal #07-09, which were individually fraced and established an average fracture gradient (Fg) of 1.11 psi/ft which was derived from instantaneous shut-in pressures (ISIP) from each zone. This Fg is acceptable to the Environmental Protection Agency (EPA), and a theoretical maximum allowable surface injection pressure (Pmax), for this well, may be calculated as shown below:

$$P_{max} = [F_g - 0.433 (S_g)] d$$

Where: Pmax = Maximum surface injection pressure at wellhead

d = 4162' shallowest perforations

Sg = Specific gravity of injected water

$$P_{max} = [1.11 - .433 (1.00)] 4162$$

$$P_{max} = 2817 \text{ psig}$$

Until such time as the permittee demonstrates that a fracture gradient other than 1.11 psi/ft applies to the disposal zones of this newly converted well, the maximum allowable wellhead injection pressure (Pmax) for this well will be 2817 psig.

- (3) The plugging and abandonment plan and schematic, submitted by your office, has been reviewed, and approved.

Prior to commencing injection into this well, permittee must fulfill permit condition Part II, C. 2. and have received **separate written authorization to inject by the Environmental Protection Agency**. In summary, these requirements for your newly permitted injection well are:

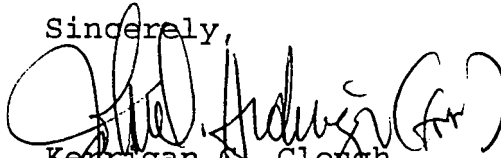
- (1) All conversion is complete and the permittee has submitted a completed **Well Rework Record (EPA Form 7520-12)**.
- (2) The pore pressure has been determined.
- (3) The well has successfully completed and passed a **mechanical integrity test (MIT)**; MIT guidance and EPA form enclosed.

All other provisions and conditions of the permit remain as originally issued.

If you have any questions, please contact Mr. Chuck Williams at (303) 312-6625.

Also, please direct the above requirements to Mr. Williams at the above letterhead address, citing **MAIL CODE 8P2-W-GW**. Thank you for your continued cooperation.

Sincerely,



Kerrigan G. Clough
Assistant Regional Administrator
Office of Pollution Prevention,
State and Tribal Assistance

Enclosure: MIT Guidance and EPA Form 7520-12

cc: Mr. Ronald Wopsock, Chairman
Uintah & Ouray Business Committee

Ms. Elaine Willie, Environmental Director
Ute Indian Tribe

Norman Cambridge
BIA - Uintah & Ouray Agency

Mr. Jerry Kenczka
BLM - Vernal District Office

Mr. Gilbert Hunt
State of Utah Natural Resources
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JK 1/8/98 *CRB* 8P2-W-640 1/13/98
 1/14/98 *JP* 8P2TA, 1/15/98
 1/23/98 *mailed*
W. G. W. 1/16/98
PRG-Stubbs 1/16/98
 8P2W

- (2) **Maximum injection pressure (Pmax)** - the permittee submitted a list of five (5) individual zones, within the Ute Tribal #07-09, which were individually fraced and established an average fracture gradient (Fg) of 1.11 psi/ft which was derived from instantaneous shut-in pressures (ISIP) from each zone. This Fg is acceptable to the Environmental Protection Agency (EPA), and a theoretical maximum allowable surface injection pressure (Pmax), for this well, may be calculated as shown below:

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osb Jack Hedingur

fr Kerrigan G. Clough
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Office of Pollution Prevention,
State and Tribal Assistance

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BLM - Vernal District Office

Mr. Gilbert Hunt
State of Utah Natural Resources
Division of Oil, Gas & Mining

FCD: January 8, 1998, car, jac, A:\MNRMD-07.09



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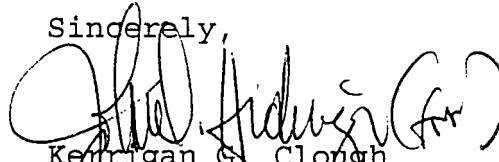
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Mr. Gilbert Hunt
State of Utah Natural Resources
Division of Oil, Gas & Mining

1/23/98 JC 3201C

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

JAN 23 1998

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:

Ms. Kathy Turner
Geology/Petroleum Engineering
Technician
Petroglyph Operating Company, Inc.
P.O. Box 1839
Hutchinson, KS 67504-1839

4a. Article Number

P 164 014 428

4b. Service Type

- | | |
|---|---|
| <input type="checkbox"/> Registered | <input checked="" type="checkbox"/> Certified |
| <input type="checkbox"/> Express Mail | <input type="checkbox"/> Insured |
| <input type="checkbox"/> Return Receipt for Merchandise | <input type="checkbox"/> COD |

7. Date of Delivery

JAN 28 1998

5. Received By: (Print Name)

Kristine L. Brown

6. Signature: (Addressee or Agent)

X Kristine L. Brown

8. Addressee's Address (Only if requested and fee is paid)

will be

JAN 30 1998

PS Form 3811, December 1994

K

Domestic Return Receipt

Thank you for using Return Receipt Service.

1/23/98 JC 3201C
P 164 014 428

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail (See reverse)

Sent to	
Ms. Kathy Turner	
Geology/Petroleum Engineering	
Technician	
Post Office, State, & ZIP Code	
Petroglyph Operating Company, Inc.	
P.O. Box 1839	
Hutchinson, KS 67504-1839	
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995